

A NEW *HOLCOCERA* CLEMENS
(LEPIDOPTERA: GELECHIOIDEA: COLEOPHORIDAE: HOLCOCERINI)
ASSOCIATED WITH PINACEAE IN NORTH AMERICA

DAVID ADAMSKI AND CHRIS T. MAIER

(DA) Department of Systematic Biology–Entomology, National Museum of Natural History, Smithsonian Institution, Washington, DC 20560-0168, U.S.A. (e-mail: dadamski@sel.barc.usda.gov); (CTM) Department of Entomology, Connecticut Agricultural Experiment Station, 123 Huntington Street, Box 1106, New Haven, CT 06504, U.S.A. (e-mail: Chris.Maier@po.state.ct.us)

Abstract.—*Holcocera concolor*, new species, is described from North America. The imago, wing venation, and male and female genitalia are illustrated. Adults have been reared from larvae collected from several species of Pinaceae.

Key Words: Blastobasinae, conifer, pine

Although the larvae of Blastobasinae (Coleophoridae) usually are considered scavengers, several species in the holcocerine genera *Asaphocrita*, *Calosima*, and *Holcocera* apparently feed on living plants of the Pinaceae. For example, *Asaphocrita aphidiella* (Walsingham) (= *H. confluentella* Dietz) has been reared from cuttings of *Pinus rigida* Miller, *H. panurgella* Heinrich from branches of *Pinus cembroides* Zuccarini, and *H. vellella* (Busck) (= *H. augusti* Heinrich) from cones of *Pseudotsuga menziesii* (Mirabel) Franco (= *P. taxifolia* (Lambert) Britton (Heinrich 1920). Larvae of *Calosima dianella* Dietz (= *H. lepidophaga* Clarke) feed on male flowers and vegetative buds and on scale leaves of cones of *Pinus elliotii* Engelmann and *P. palustris* Miller (Clarke 1960). Furthermore, the new species of *Holcocera* described herein has been collected on several species of Pinaceae. Among species in the tribe Blastobasini, *Blastobasis floridella* (Dietz) feeds on a cycad, attacking the female cones of *Zamia integrifolia* Aiton (Zamiaceae) (Dietz 1910). Based on these as-

sociations, the use of gymnosperms, especially conifers, by larvae of Nearctic Blastobasinae may be considerably more widespread than is suggested by limited rearing information.

Larvae of *Holcocera concolor* were collected from red pine, *Pinus resinosa* Aiton, at several sites in New England by members of a survey team of the Connecticut Agricultural Experiment Station. The reared moths were sent to the Systematic Entomology Laboratory, USDA, National Museum of Natural History, Smithsonian Institution, Washington, DC, (USNM) for identification. These specimens together with a large series of conspecific moths within the USNM, including several specimens on loan from the Canadian National Collection, Ottawa (CNC), were discovered to represent an undescribed species. The purpose of this publication is to inform North American foresters and researchers about a new conifer-feeding moth that previously has been overlooked.

Kornerup and Wanscher (1978) is used as a color standard for the description of the



Fig. 1. Holotype of *Holcocera concolor*.

adult vestiture. Genitalia were dissected as described by Clarke (1941), except mercurochrome and chlorazol black were used as stains. Pinned specimens were examined with dissecting and compound microscopes. Measurements of the wings were made by using a calibrated ocular micrometer.

Holcocera concolor

Adamski and Maier, new species

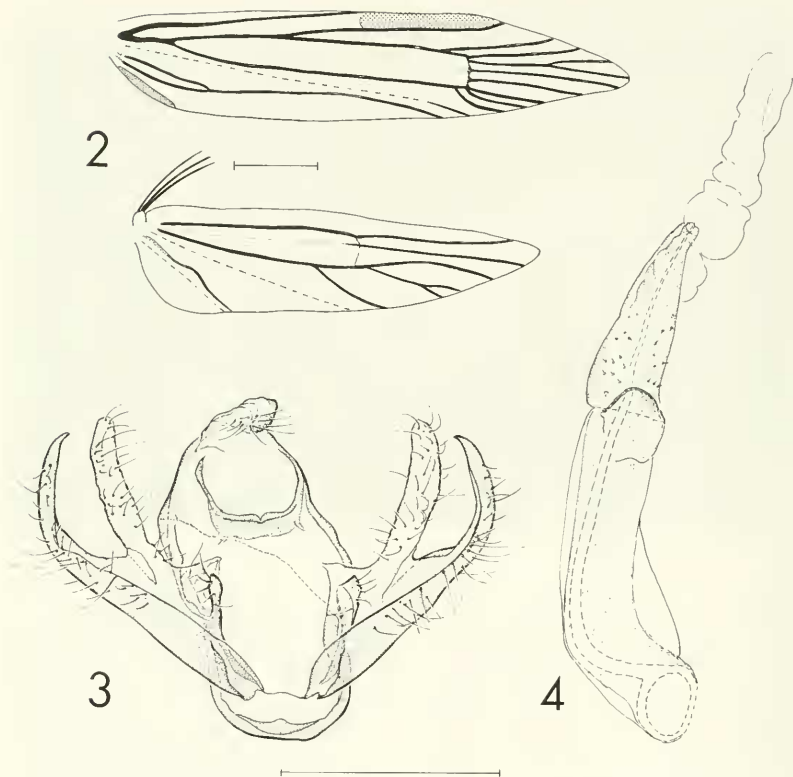
(Figs. 1–5)

Diagnosis.—*Holcocera concolor* is similar to *Calosima lepidophaga* (Clarke) in wing pattern and color, but *H. concolor* is usually darker and less shiny. In addition, the first flagellomere is notched in the male of *H. concolor*, whereas it is unmodified in *C. lepidophaga*. Faded or rubbed females are difficult to identify without dissection because they lack the notch on the first flagellomere. *Holcocera concolor* has a more anteriorly arched M_3 in the hindwing, with M_2 usually more approximate to M_1 than in *C. lepidophaga*. The male genitalia of *C.*

lepidophaga differ from the male genitalia of *H. concolor* by having a median lobe on the ventral margin of the gnathos, a divided juxta, and a bulbous base of the aedeagus. The female genitalia of *C. lepidophaga* differ from the female genitalia of *H. concolor* by having a more coiled ductus bursae and a more dentate signum. The immature stages of *H. concolor* are unknown.

Description.—Adult. *Head*: Vertex brownish gray; frontoclypeus brownish gray intermixed with pale yellowish-orange scales; outer surface of labial palpus brownish gray intermixed with few pale yellowish-orange scales, gradually darkening to apex of third segment; inner surface of labial palpus pale yellowish orange intermixed with few brownish-gray scales; scape and basal half of flagellum brownish gray, distal half yellowish orange; male first flagellomere with a distal notchlike invagination, female first flagellomere unmodified; proboscis pale yellowish orange.

Thorax: Mesonotum brownish gray; te-



Figs. 2-4. 2, Wing venation of *Holcocera concolor*. Scale = 1.0 mm. 3-4, Male genitalia of *Holcocera concolor*. Scale = 0.5 mm. 3, Genital capsule. 4, Aedeagus.

gula brownish gray basally, yellowish orange distally; legs brownish gray intermixed with pale brownish-gray scales near midsegment of hindfemur, and subapical and apical surfaces of all other segments and tarsomeres. Forewing (Figs. 1-2), length 6.9-8.1 mm ($n = 50$), yellow orange, undersurface brown; venation (Fig. 2), with all cubital veins longer than width of cell; M_2 often closer to M_1 than to M_3 ; hindwing pale gray; venation with M_2 broadly arched, closer to M_1 than to M_3 ; M_3

and CuA_1 stalked for more than half of length of stem.

Male genitalia (Figs. 3-4): Uncus slightly elongate, setose, laterally flattened; gnathos broad, with a slightly emarginate median notch, dorsal arms of gnathos narrow; upper part of valva digitiform and setose; lower part of valva tapered into an elongate, inwardly curved spinelike process; proximal flange forming a small setose triangular support; vinculum narrow; juxta platelike; aedeagus elongate, acutely curved basally;

sclerite of aedeagus elongate, acutely curved posteriorly into a circular basal support; anellus elongate, smooth, with microsetae.

Female genitalia (Fig. 5): Ovipositor telescopic, with three membranous subdivisions; ostium within intersegmental membrane between 7th and 8th sterna, but closer to 8th; 8th sternum widely emarginate anteriorly, mostly setose posteriorly; inception of ductus seminalis anterior to 7th sternum; 7th sternum broadly rounded; ductus bursae elongate, slightly denticulate anteriorly; corpus bursae slightly denticulate, signum wide, platelike.

Type.—Holotype, ♂, [Barnstable Co.], Barnstable, Mass[achusetts], May 25, 1951, C. P. Kimball; USNM ♂ genitalia slide 82257 by D. Adamski. Deposited in USNM.

Paratypes (17 ♂, 30 ♀).—UNITED STATES: MAINE: Aroostook Co., Ashland, July and 3 August 1943, 1 ♀ on genitalia slide 489 by R. B. Selander (2 ♀); Franklin Co., Farmington (1 ♀); Oquossoc, 22, 23 June and 6, 12, 14 July, USNM ♂ genitalia slides 80737, 80738 by D. Adamski, USNM ♂ wing slide 80811 by D. Adamski, USNM ♀ genitalia slide 80789 by D. Adamski (3 ♂, 2 ♀); Hancock Co., Bar Harbor, 12 July 1936, 5 June 1937, A. E. Brower, ♀, lot 405 bred from witches' broom on larch (1 ♂, 1 ♀); Kennebec Co., Augusta, 7 July 1940, A. E. Brower (1 ♀); [Oxford Co.], Parkertown, Tim Pond, 18 July (1 ♀); Penobscot Co., Lincoln, 11 July (1 ♂); Orono, 57-B84 emerged 14 April 1958, and 57-B85 emerged 11 April 1958, both reared from Norway spruce (2 ♀); Paten, 11 July (1 ♂); Somerset Co., Caratunk, 2 July (1 ♀); Jackman, 51C B17 (1 ♀); Moose River, ex. white spruce, emerged 24 April 1952 (1 ♀); Washington Co., Marion, 9 July (3 ♀); [town unknown], 13 August 1997, Carol R. Lemmon, larva collected on *Pinus resinosa* Aiton and reared, DA ♀ genitalia slide 4097 (1 ♀). MASSACHUSETTS: Dukes Co., Martha's Vineyard, 18 April–24 June, F. M. Jones, bred from cat-

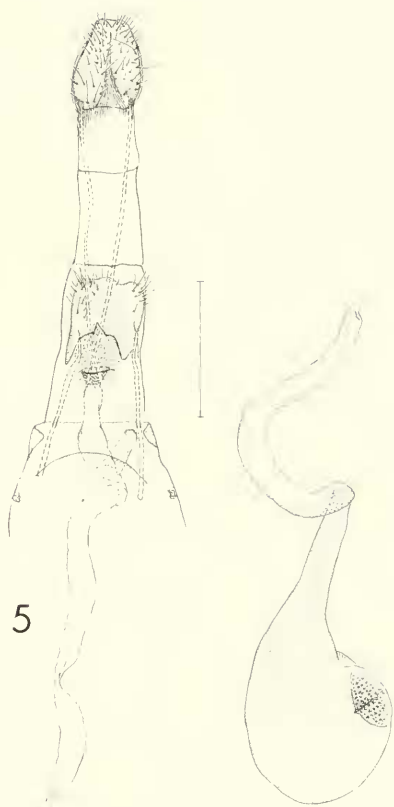


Fig. 5. Female genitalia of *Holcocera concolor*. Scale = 1.0 mm.

kins of *Pinus rigida* Miller, USNM ♀ genitalia slide 81236 by D. Adamski (3 ♂, 1 ♀); Nantucket Co., Nantucket Island, genitalia slides 258, 259 by R. B. Selander (2 ♀); [county and town unknown], 28 May–15 July 1951–52, C. P. Kimball, genitalia slides 289, 290, 293 by R. B. Selander (5 ♂, 8 ♀). CANADA: BRITISH COLUMBIA: Clinton, 12 June 1938, G. S. Walley, ♂ genitalia slide 4492 by D. Adamski (1 ♂). NOVA SCOTIA: South Milford, 25

June 1936, J. McDunnough (1 ♀). ONTARIO: Angus, reared from white spruce as part of Forest Insect Survey in 1942. ♂ genitalia slide 1460, ♂ wing slide 1668, and ♀ genitalia slide 1461 by D. Adamski; (1 ♂, 1 ♀). QUEBEC: Norway Bay, 1 June 1938, E. G. Lester, ♂ genitalia slide 1459 by D. Adamski (most of specimen in gelatin capsule) (1 ♂). SASKATCHEWAN: Big River, reared from cones of *Picea glauca* (Moench) Voss, ♀ genitalia slide 4493 by D. Adamski (1 ♀). All paratypes in USNM, except 5 in CNC, and 1 from Maine in Connecticut Agricultural Experiment Station. Two additional specimens from Monson, Hampden Co., Massachusetts (♀) and Rindge, Cheshire Co., New Hampshire (♂) are lacking their abdomens, and are not included in the paratype series.

Distribution.—*Holcocera concolor* is known from Massachusetts northward to Nova Scotia and westward to British Columbia.

Recorded larval hosts.—Pinaceae: *Larix* sp. (larch) witches' broom; *Picea abies* (Linnaeus) Karsten (Norway spruce); *Picea glauca* (Moench) Voss (white spruce) cones; *Pinus resinosa* Aiton (red pine); *Pinus rigida* Miller (pitch pine); *Pinus strobus* Linnaeus (white pine).

Etymology.—*Holcocera concolor* is named for the uniform yellowish-orange color of the forewings.

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